

WHAT IS CLAIMED IS:

- 1 1. A process of cleaning a precision surface comprising contacting an etched  
2 precision surface having vias, cavities, trenches or channels incorporated therein with a  
3 composition which comprises liquid or supercritical carbon dioxide and a fluoride-generating  
4 species.

- 1 2. A process in accordance with Claim 1 wherein said fluoride-generating source is a  
2 fluorine-containing acid.

- 1 3. A process in accordance with Claim 1 wherein said fluorine-containing acid is  
2 selected from the group consisting of hydrogen fluoride, fluorosulfonic acid and  
3 perfluorosulfonic acid.

- 1 4. A process in accordance with Claim 1 wherein said fluoride-generating species is  
2 a fluorine-containing acid amine adduct.

- 1 5. A process in accordance with Claim 4 wherein said fluorine-containing amine  
2 adduct is pyridine:hydrogen fluoride, amine:hydrogen fluoride or an alkylamine:hydrogen  
3 fluoride.

- 1 6. A process in accordance with Claim 1 wherein said fluoride-generating species is  
2 an amine fluoride.

10/22/90 10:25:00

1 7. A process in accordance with Claim 1 wherein said fluoride-generating species is  
2 a quaternary amine fluoride.

1 8. A process in accordance with Claim 7 wherein said quaternary amine fluoride is  
2 selected from the group consisting of a tetraalkylammonium fluoride and a  
3 perfluoroalkylammonium fluoride.

1 9. A process in accordance with Claim 1 wherein said fluoride-generating species is  
2 a perfluoroalkylsulfonyl fluoride.

1 10. A process in accordance with Claim 9 wherein said perfluoroalkylsulfonyl  
2 fluoride is trifluoromethylsulfonyl fluoride or perfluorooctylsulfonyl fluoride.

1 11. A process in accordance with Claim 1 wherein said fluoride-generating species is  
2 an alkylsulfonyl fluoride.

1 12. A process in accordance with Claim 1 wherein said fluoride-generating source is  
2 an arylsulfonyl fluoride.

1 13. A process in accordance with Claim 1 wherein said fluoride-generating source is  
2 an onium salt-containing fluorine.

104290 402E6B60

1 14. A process in accordance with Claim 13 wherein said onium salt containing  
2 fluorine is selected from the group consisting of benzene diazonium fluoride and benzene  
3 diazonium tetrafluoroborate.

1 15. A process in accordance with Claim 1 wherein said composition includes a  
2 component selected from the group consisting of surfactant, a co-solvent and mixtures  
3 thereof.

1 16. A process in accordance with Claim 1 wherein said contact between said  
2 precision surface and said composition occurs at a pressure in the range of between about  
3 1,000 psi and about 6,000 psi and at a temperature in the range of between about 40°C and  
4 about 100°C.

1 17. A process in accordance with Claim 1 wherein said precision surface is provided  
2 by a semiconductor sample, a metal selected from the group consisting of aluminum, silicon,  
3 tungsten, titanium, tantalum, platinum, palladium, iridium, chromium, copper and silver, a  
4 polymer selected from the group consisting of polyimides and polyamides or insulators.

1 18. A process in accordance with Claim 17 wherein said precision surface is  
2 provided by a semiconductor sample.

1 19. A process in accordance with Claim 18 wherein said semiconductor sample is  
2 selected from the group consisting of a semiconductor wafer, a semiconductor chip, a  
3 ceramic substrate and a patterned film structure.

- 1 20. A process in accordance with Claim 19 wherein said semiconductor sample is a  
2 semiconductor wafer.

B' cont.

---

09893207.062701